

ABSTRACT

This invention is an oxynitride film forming method including: a reaction chamber heating step of heating a reaction chamber to a predetermined temperature, the reaction chamber containing an object to be processed; a gas heating step of heating a process gas to a temperature not lower than a reaction temperature at which an oxynitride film can be formed, the process gas consisting of dinitrogen oxide gas; and a film forming step of forming an oxynitride film on the object to be processed by supplying the heated process gas into the heated processing chamber. The temperature to which the reaction chamber is heated in the reaction chamber heating step is set at a temperature below a temperature at which the process gas undergoes a reaction.